Design and Process Considerations

Design Considerations

Data

Both input and processed data should be archived.

Input buffers containing positional data should have similar or same format before being processed. Convert to earth centered.

A front-end-processor should be used to interface with and format external sources.

How will acquisition data (look angles) be calculated and how will it be output?

The system should be able to monitor quality of input data (prior to processing.)

Automatically generate a positional data file - one for each tracking radar and one for the "best" track.

Automatically generate an ASCII file of raw radar data for all tracking radars from T-0 to LOS. File should have labels and not require a separate README file.

Distribute non-sensitive data via the Internet allowing real-time remote viewing via a web browser.

A standard format (e.g. XML) should be used for data output from system.

General Design

System should have User Defined Command Routine capability.

Changes to tracking radars need to be able to be made in real time (dynamically - specifically for rendezvous-recovery)

Should we modularize each application as a separate component?

Develop a system that can exist on one computer or be distributed to multiple computers. This allows scalability and mobility. *

System should have the capability to monitor and compare data output from redundant systems in order to calculate a confidence level.

Dedicate a processor to a subset of the system functions. The machine that collects the data could send relevant data to each processor as required.

Incorporate/replace the PCGDS/PCDQS in both the RCC and Mobile RCC.

User Interface

Mission setups can be very cumbersome. Too many files required. Sceen editors would be easier and more versatile.

Panels should be designed so that one person can control the source of data and displays.

Process Considerations

System Requirements

Which functions in the existing system are required in the new system?

Get requirements from users (RSO, etc.)

What has been the results of NASA investigations in the area of hardware and software?

Investigate existing systems (COTS,etc.):
White Sands
Naval Air Warfare Center (China Lake)
Range Computation and Control System II
Naval Undersea Warfare Center (Newport, RI)
Pax River
KSC
VAFB
JSC

OS, Language

The most commonly used languages for real time development are Ada, C, C++.

Object Oriented Framework for Parallel and High Performance Computing (SAIC).

Windows NT not suitable for real -time development.